# NOTES AND NEWS.

THE REV. M. J. BERKELEY, the distinguished English cryptogamic botanist, is dead.

PROF. F. H. KNOWLTON is collecting fossil plants in western New Mexico, Arizona and California.

A BIOGRAPHICAL sketch of the late Heinrich Gustav Reichenbach (1823-1889) is published in *Journal of Botany* (July).

AN ACCOUNT of the botanical work done at the Toronto meeting of the A. A. A. S. will be given in the October GAZETTE.

W. W. CALKINS has gone on a trip to the mountains of East Tennessee, and will not let any lichens slip through his hands while away.

PROFESSOR E. L. GREENE spent the summer months in an exploration of the forests of Colorado, Montana, Oregon, Washington and California.

ERWIN F. SMITH is investigating peach yellows in Michigan, and before his return to Washington will visit the principal peach-growing regions of the east.

MR. M. B. WAITE is investigating pear blight, especially in its relation to the Le Conte industry in the south, under the direction of the section of vegetable pathology.

IN HIS NOTES on the synonymy of Cladrastis tinctoria, in a recent number of *Garden and Forest*, Dr. C. S. Sargent announces his adherence to the principle of the maintenance of the earliest *specific* name.

DAVID G. FAIRCHILD, a graduate of the Kansas Agricultural College, and a special student of Dr. Halsted, has been appointed an assistant in the section of vegetable pathology in the United States Department of Agriculture.

AMONG SHORT-LIVED seeds those of some of the willows are remarkable. Woloszczak finds that the seeds of Salix pentandra live only forty-eight days. Wiesner found those of S. purpurea viable for only eighty-five days.

DR. GEO. VASEY is making a tour through the west for the purpose of selecting sites for several additional grass stations. He will visit Kansas, Colorado, California and several other states, returning to Washington about the first of September.

FRANK S. EARLE, of Mississippi; Prof. E. S. Goff, of Madison, Wis.; and Prof. L. R. Taft, of the Agricultural College of Michigan, have been appointed special agents in the section of vegetable pathology of the United States Department of Agriculture.

DR. A. ENGLER has been called to the University of Berlin as professor of botany and director of the Royal Botanical Gardens. If he accepts, a worthy successor to the distinguished Eichler will have been secured. Dr. Urban has been nominated as assistant director.

M. V. FAYOD contributes a monograph of over 200 pages, entitled Historie naturelle des Agaricinés, to the *Annales des Sci. Nat.* (*Bot.*). The comparative anatomy and development of these fungi is described at length. A grouping of all the known genera, with descriptions of their characters and critical remarks forms about half of the monograph.

DR. DOHRN, the director of the zoölogical station at Naples, appeals to all algologists to send to the station copies of papers relating to algæ, as the basis for a library for the assistance of the botanists who avail themselves of the privileges of the station. In the new building which is being erected additional accommodations will be provided for botanical work.

DRS. LEHMAN AND MORI, in a recent paper[1] collate the literature and experiments as to the poisonous nature of the seeds of the common corn cockle, *Agrostemma Githago* L. These show that the fresh seeds are highly poisonous, but that they become entirely innocuous after roasting. The authors suggest that these seeds would form a very useful food for domestic animals.

THE BULLETIN of the Royal Gardens, Kew, has done a great service to botanists in giving (No. 31, July, 1889) a guide to the botanical literature of the British Empire. It was suggested by the fact that "Kew is often called upon to answer questions, on the shortest notice, concerning the vegetation of some remote part of the world, and the best books to consult on the subject; hence the idea of preparing a concise guide."

NEWTON B. PIERCE, who has been doing special work with Prof. Spalding, at Ann Arbor, for the past two years, has been commissioned by the Secretary of Agriculture, to visit California for the purpose of investigating a "mysterious" grape disease which appeared in that state three or four years ago, and which has already destroyed many thousand vines. His work will be carried on under the direction of the section of vegetable pathology.

FROM AN examination of the anatomical structure of the pitchers of Sarracenia Drummondii, E. Heckel comes to the conclusion that it represents a hollow petiole, and the operculum the lamina of the leaf. The resemblance in structure is very close to the petiole of Nymphæa alba, and the near affinity of the Nymphæaceæ and Sarraceniaceæ can not be doubted. The structure and arrangement of the vascular bundles are very similar. The parenchyma of the petiole of the water-lily contains large numbers of air-cavities lined with hairs. These appear to be fused in Sarracenia into one large central cavity, the cavity of the pitcher, in which we again find the hairs which prevent the escape of the captured insects.—*Jour. Roy. Mic. Soc.*, June.

MR. L. MAGNIN strongly recommends[2] iodized phosphoric acid to replace the iodized chloride of zinc as a reagent for cellulose. Those who have used the latter are well aware of its shortcomings in the way of difficulty of manufacture and slowness of action. The new reagent is said to act almost instantly or within a few minutes. To prepare it take pure glacial phosphoric acid, add one-fourth to one-third of its bulk of distilled water, and then some crystals of potassic iodide and iodine until the mixture becomes of a sherry brown. In using this reagent with cellulose walls in which the presence of other matter is suspected, it is well to warm the section in a one per cent. solution of HCl or a four per cent. solution of KOH, in case the coloration does not appear promptly. The author also recommends iodized chloride of calcium and chloride of aluminium.

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[1] Archiv für Hygiene, ix. 257.

[2] Bull. Soc. Bot. France, xxxv. 421.—*fide J. R. M. S.*

THE PUZZLING and much-debated question regarding the nitrogen assimilation of plants has been receiving much attention during the last few years. In all the discussion the behavior of the Leguminosæ cuts an important figure. Recall the references in this journal recently to papers on the root-tubercles of these plants. The publication in November, 1888, of a paper by Hellriegel and Willfarth seems to have given fresh impetus to the study and discussion of this interesting problem. The conclusions reached by these experimenters (continuing Hellriegel's earlier researches) were essentially these:

The Leguminosæ differ markedly from other plants (particularly grasses with which they were compared) in their N assimilation, since the latter depend entirely on the N in the soil for their supply, while the former have an additional source in the free N of the air. This they are enabled to utilize, not by any power of their own, but through the low organisms (as to whose nature nothing is decided) which enter into symbiotic relations with the roots, and thus give rise to the tubercles. These tubercles are absent from the roots of Leguminosæ grown in sterilized soil, and are formed when to such soil a small quantity of an infusion of unsterilized soil is added. Plants from which such tubercles are absent can not assimilate free nitrogen.

These conclusions as to the great difference between the N assimilation of Leguminosæ and other plants are strongly controverted by Frank[3], who points out that Joulie, in 1885, determined the fixation of free N by ray grass and buckwheat, while he himself has demonstrated the same for some of the simple algæ. He adds details of recent experiments with oats showing a like N accumulation. In the experiment with oats the N in the soil was at the beginning 0.118 per cent. After raising nineteen strong plants, bearing 530 ripe seeds, analysis showed 0.131 per cent. in soil. This increase was probably due to refuse from the plants, such as the root-hairs and finer rootlets. The N in the seed sown was 0.0142 gm.; in the crop, 0.487 gm. In a vessel containing the same quantity and quality of soil treated in the same way, but having no plants in it, the percentage of N at the conclusion of the experiment was 0.110. Hellriegel's negative results Frank ascribes to the lack of vigor in his culture plants, and asserts that plants will not assimilate N from either soil or air unless they are strong and healthy. He also claims at length the absence of exact proof that the root-tubercles of Leguminosæ are organs of assimilation. Hellriegel's case on this point rests on the observation that among peas grown on a soil free from N some starved, while others subsequently recovered and grew well. In subsequent experiments this recovery was hastened by watering the plants with a minute quantity of an infusion of field soil. From this Hellriegel infers that the peas were unable to assimilate the free N until the tubercles were formed by the infection of the roots from the infusion, after which the plants grew well. Frank, however, interprets the experiment to mean that the peas were unable to assimilate free N because they could not, under the conditions, attain sufficient vigor. He further argues *a priori* against the probability of Hellriegel's theory, and shows the dissimilarity between the root tubercles and mycorhiza, with which they have been compared.

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[3] Ueber den gegenwärtigen Stand unserer Kenntnisse der Assimilation elementaren Stickstoffs durch die Pflanze.—Ber. d. D. bot. Gesells., vii. 234.